نام و نام خانوادگی ....علی صبری.... پاسخنامه تشریحی تکلیف شماره ..۱۳.. کلاس ..یازدهم.. A

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$y=(a-1)x^2+x+3 \rightarrow \dfrac{-b}{2a}=2 \rightarrow \dfrac{-1}{2a-2}=2 \rightarrow a=\dfrac{3}{4}$

$\rightarrow y=-\frac{1}{4}x^2+x+3 \rightarrow -\frac{1}{4}x^2+x+3=0 \rightarrow x^2-4x-12=0$

$\rightarrow \begin{cases} x=6 \ ✓ \ \text{مثبت} \\ x=-2 \ ✗ \end{cases} \rightarrow (6)$

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$f(x)=mx^2-5x+m \quad \begin{cases} a<0 \rightarrow m<0 \\ \Delta>0 \rightarrow 25-4m^2>0 \rightarrow 4m^2<25 \rightarrow m^2<\frac{25}{4} \rightarrow -\frac{5}{2}<m<\frac{5}{2} \end{cases}$

x_1, x_2: $-\ \ +\ \ -$

$\xrightarrow{\cap} -\frac{5}{2}<m<0$

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$\alpha=\dfrac{3-\sqrt{5}}{3} \quad \beta=\dfrac{3+\sqrt{5}}{3} \rightarrow S=2 \quad P=\dfrac{9-5}{9}=\dfrac{4}{9}$

$\rightarrow x^2-Sx+P=0 \rightarrow x^2-2x+\frac{4}{9}=0 \rightarrow 9x^2-18x+4=0$

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$2x^2-8x+m+2=0 \rightarrow 3\alpha^2+\beta^2=2\alpha^2+2\beta^2+\alpha^2-\beta^2=2(\alpha^2+\beta^2)+(\alpha-\beta)(\alpha+\beta)=12$

$\xrightarrow{\alpha<\beta} 2(S^2-2P)+\left(-\dfrac{\sqrt{\Delta}}{|a|}\right)(S)=12 \xrightarrow[P=\frac{m}{2}+1]{S=4} 2\left(16-2\left(\frac{m}{2}+1\right)\right)+\left(-\dfrac{\sqrt{48-8m}}{2}\right)(4)$

$=2(14-m)-2\sqrt{48-8m}=12 \rightarrow 28-2m-4\sqrt{12-2m}=12 \rightarrow 16-2m=4\sqrt{12-2m}$

$\rightarrow 8-m=2\sqrt{12-2m} \rightarrow m^2-16m+64=48-8m \rightarrow m^2-8m+16=0 \rightarrow m=4$

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$ext\Big|_k^h \rightarrow y=a(x-h)^2+k \rightarrow ext\Big|_9^2 \rightarrow y=a(x-2)^2+9 \xrightarrow{(0,5)} a=-1$

$\rightarrow y=-x^2+4x+5 \rightarrow -x^2+4x+5>0 \rightarrow x^2-4x-5<0$

$-1, 5$: $+\ \ -\ \ +$

$\rightarrow (-1,5)$

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$\alpha x^2 - 7x + 9\beta = 0 \rightarrow \frac{1}{\alpha} + \frac{1}{\beta} = \frac{S}{P} = \frac{\frac{7}{\alpha}}{\frac{9\beta}{\alpha}} = \frac{7}{9\beta} \xrightarrow{\beta = \frac{2}{3}} \frac{7}{9\beta} = \boxed{\frac{7}{6}}$

$\begin{cases} \alpha\beta = \frac{9\beta}{\alpha} \rightarrow \alpha^2\beta = 9\beta \rightarrow \alpha^2 = 9 \\ \frac{7}{\alpha} = \alpha + \beta \rightarrow 7 = \underbrace{\alpha^2}_{9} + \beta\alpha \xrightarrow{\beta > 0} \boxed{\alpha = -3} \end{cases}$ $\boxed{\beta = \frac{2}{3}}$

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$x^2 + mx - 2m = 0 \rightarrow \alpha^2 = -m\alpha + 2m \rightarrow \alpha^2 - m\beta = 8 \rightarrow -m\alpha + 2m - m\beta = 8$

$\rightarrow 2m - m\underbrace{(\alpha + \beta)}_{-m} = 8 \rightarrow m^2 + 2m = 8 \rightarrow m^2 + 2m - 8 = 0 \rightarrow \begin{cases} m = -4 \\ m = 2 \end{cases}$

$\xrightarrow{\Delta > 0} \boxed{m = 2} \rightarrow S = -m = -2$

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$f(x) = mx^2 + 4x + \frac{m}{2} + 7 \rightarrow \frac{-\Delta}{4a} = 8 \rightarrow 32m = -(14 - 2m^2 - 28m)$

$\rightarrow 2m^2 - 4m - 14 = 0 \rightarrow m^2 - 2m - 8 = 0 \rightarrow \begin{cases} m = 4 & \times \\ m = -2 & \checkmark \end{cases} \quad \Delta > 0$

$\rightarrow -2x^2 + 4x + 4 = 0 \rightarrow x^2 - 2x - 2 = 0 \rightarrow \begin{cases} x = 2 \rightarrow \boxed{k = 2} \\ x = -1 \end{cases}$

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$a(x-1)^2 + 4 \xrightarrow{(0,4)} a = -\frac{1}{2} \rightarrow y = -\frac{1}{2}x^2 + 2x + 4$

$\rightarrow \frac{1}{\alpha} + \frac{1}{\beta} = \frac{S}{P} = \frac{4}{-8} = -\frac{1}{2}$

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$x^2 - (4a + 4)x + (2a^2 + 4a + 2) = 0$

$\rightarrow x = 2 \rightarrow 4 - 8a - 8 + 2a^2 + 4a + 2 = 0 \rightarrow 2a^2 - 2a - 1 = 0$

$\rightarrow \begin{cases} a = +1 \rightarrow x^2 - 8x + 12 = 0 \rightarrow \begin{cases} x = 2 \\ x = 6 \end{cases} \\ a = -\frac{1}{2} \rightarrow x^2 - \frac{8}{3} + \frac{4}{3} = 0 \rightarrow \begin{cases} x = 1 \\ x = \frac{2}{3} \end{cases} \end{cases}$ $\rightarrow \underbrace{6, \frac{2}{3}}$